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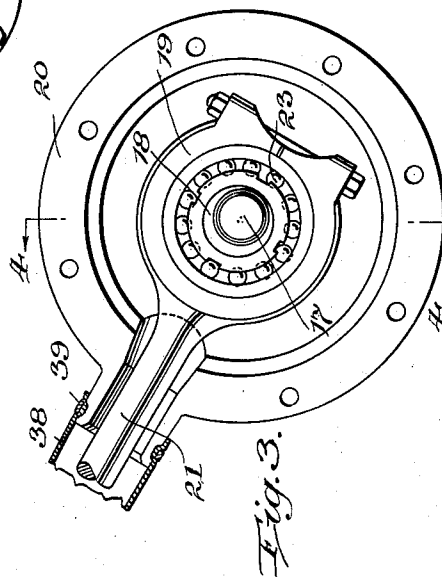
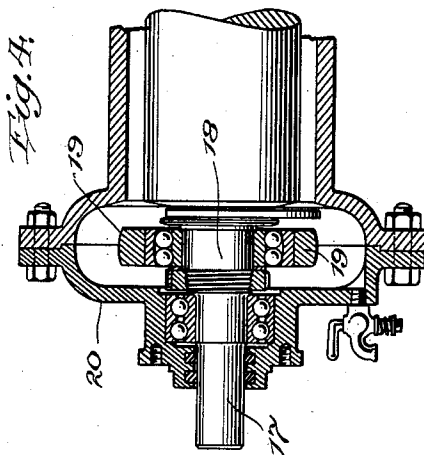
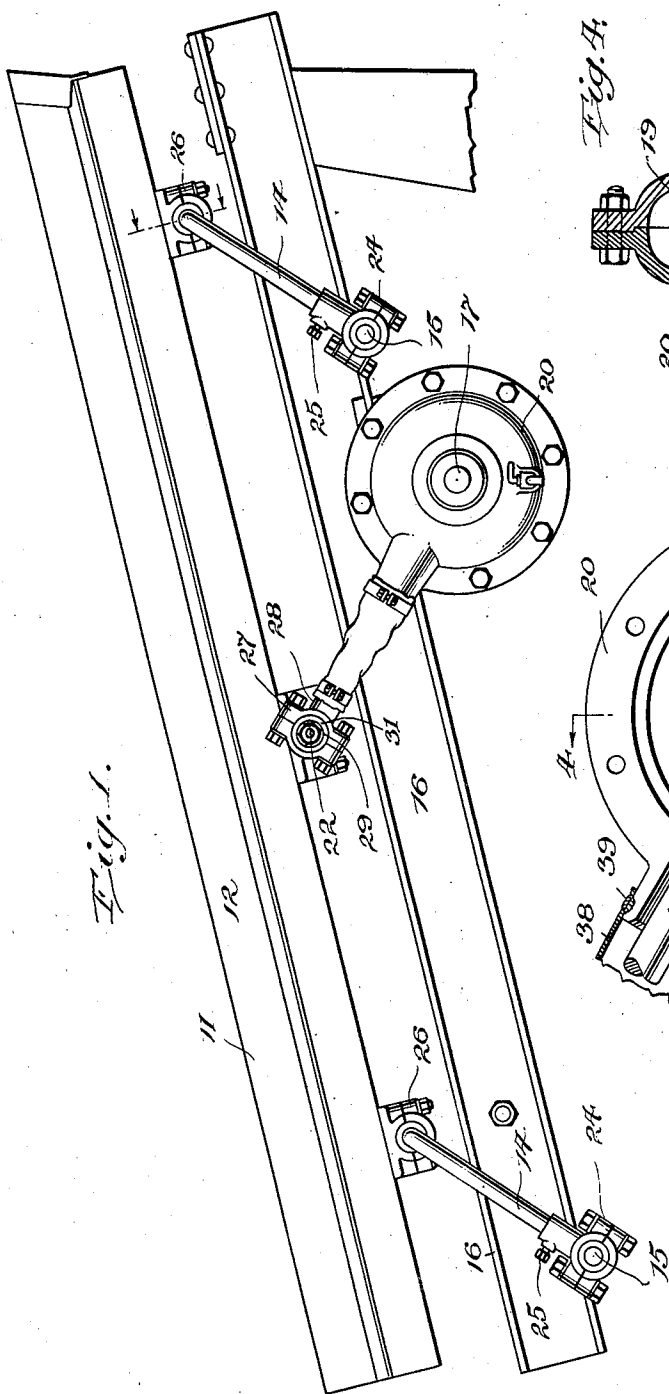
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1,986,102

SCREENING MACHINE

Filed Nov. 11, 1930

2 Sheets-Sheet 1



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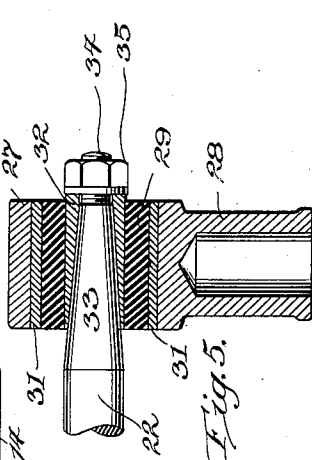
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UNITED STATES PATENT OFFICE

1,986,102

SCREENING MACHINE

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4 Claims. (Cl. 209—365)

The present invention relates to shaking screens and more particularly to means for preventing dust and grit from entering the bearings of the mechanism for reciprocating the screen.

5 The problem of properly lubricating the pivotal connections and driving mechanism of screens and reducing friction and wear in the relatively movable parts thereof is made difficult by the great amount of grit and dust suspended in the air surrounding the screen. Usually the screens are reciprocated by means of eccentrics and are supported on pitman rods. While certain precautions have been taken to minimize the entrance of dust between relatively movable parts of the eccentrics and supports it has been found that complete exclusion of dust is practically impossible with the usual means employed for this purpose.

20 This invention eliminates sliding relation between the elements of the several connections in the drive and supports by interposing between the relatively movable parts thereof an elastic cylindrical member engaging the elements of the connection and capable of taking up torsional twist to which the member is subjected upon relative movement of the pivotal connection.

25 The invention further contemplates means for excluding dust from the eccentric and the connecting rod through which reciprocation is imparted from the drive shaft.

30 The invention will be more clearly understood from the appended drawings and the following description thereof.

35 Fig. 1 is an elevation of the screen with its supports and shaking mechanism;

Fig. 2 is a plan view of the screen;

Fig. 3 is a side view of the eccentric, the cover therefor being removed;

40 Fig. 4 is a sectional view of the eccentric taken on line 4—4 of Fig. 3;

Fig. 5 is a sectional view of the pivotal connection between the screen and eccentric connecting rod; and

45 Fig. 6 is a sectional view of the elastic bearing for a supporting pitman.

Referring to the drawings, the screen 11 comprises a rectangular frame 12 supporting a foraminous member 13. The screen is supported by pitmen 14 for oscillation about rods 15 on a fixed frame 16. A drive shaft 17 is provided at each end with an eccentric portion 18 with which an eccentric strap 19 cooperates. The shaft 17 and eccentric 18 are enclosed in a dust proof housing 20. A connecting rod 21 is secured at one end to each eccentric strap and is pivotally

connected at its other end to a transverse shaft 22 secured to the screen. Ball bearings 23 are interposed between the eccentric 18 and strap 19 as shown in Figs. 3 and 4. The construction just described is, in general, one form of screen in extensive use.

It is evident from the drawings that, upon rotation of the drive shaft 17, there will be relative movement between the frames 12, 16 and pitmen 14 as well as between the frames and the connecting rods 21. Ordinarily the bearings for the pitmen and connecting rods provide for sliding relative movement. Obviously, due to dust or fine particles of the screened material being suspended in the air surrounding the screen, foreign matter finds its way into the bearings and causes abrasion thereof in a short time.

To obviate the possibility of dust entering the bearings the following construction is adopted. The pitmen 14 form the legs of a U-shaped member, the ends of which are clamped to split journal bearings 24 by means of set screws 25. The transverse rods 15 secured to the fixed frame 16 are journaled in bearings 24 while the horizontal portion of each of the pitmen is journaled in bearings 26 secured to the screen. Fastened to the free end of each of the connecting rods 21 is a split bearing 27, one half of which has formed integrally therewith a socket 28 in which one of the connecting rods is secured. Shaft 22 is journaled in these last mentioned bearings. Interposed between the relatively movable parts in each bearing is a substantially cylindrical elastic bushing 29 so clamped to the bearings and shafts that it grips them firmly to prevent admission of dust, yet is capable of taking up the twist incident to relative movement of the parts referred to. It is, therefore, apparent that there is no actual sliding contact between relatively movable elements of the bearings and that there are no voids into which dust can find its way.

In Fig. 5 the elastic bushing, preferably rubber, is vulcanized to an outer sleeve 31 and to a tapered sleeve 32. When assembled in the machine the bearing 27 firmly clamps the sleeve 31. Sleeve 32 is clamped to the tapered portion 33 of shaft 22, each end of the shaft being so tapered and having a threaded end portion 34 to accommodate a nut 35 for forcing the sleeve 32 onto the tapered portion of the shaft. It will be seen that the sleeves have no relative movement with respect to the parts to which they are clamped but that relative movement between the sleeves is permitted by the elastic bushing.

Another form of bushing is illustrated in Fig. 55

6 in which the elastic bushing is compressed when the halves of the split bearing are assembled. The bushing may be split to permit insertion of pitman 14 therein and the pitman is preferably ribbed at 36 to insure positive engagement between the bushing and pitman. The bearing is furthermore provided with flanges 37 so that the rubber bushing is prevented from moving laterally with respect to the bearing. It is apparent that pitman 14 may rotate slightly with respect to bearing 26, the extent of rotative movement being limited only by the elasticity of the bushing.

As a further safeguard against entrance of dust into the eccentric housing there is interposed between the socket 28 and the eccentric housing 20 a flexible sleeve or stocking 38 made preferably from leather or other impervious material. The stocking is clamped to the socket and housing by bands or clamps 39. Relative movement of the screen with respect to the eccentric housing is thus permitted without danger of foreign materials entering the housing.

From the foregoing description it will be seen that those pivotal connections which are most exposed to dust suspended in the air surrounding the screen are protected against abrasion by the expedient of substituting for the usual film of oil an elastic bushing secured to and completely filling the spaces between the relatively movable parts. The bushing takes up the slight torsional movement and eliminates surface contact between the parts. The eccentric and the connecting rod are protected against entrance of dirt and grit by the employment of the flexible stocking thus eliminating packed stuffing boxes in this portion of the machine.

A preferred form of elastic connection has been described in detail but such modifications as tend to improve the operation of the mechanism are intended to be included in the invention.

What is claimed is:—

1. In a screening machine, a screen; a fixed frame; means on said frame for reciprocating said screen including a rotatable eccentric and a connecting rod for transmitting movement from

said eccentric to said screen; anti-friction bearings interposed between the eccentric and the connecting rod; oscillatable supporting members for said screen; bearings for said members and connecting rod secured to said screen; elastic rubber members in said bearings; and means for holding said elastic members in fixed relation to said bearings and said supporting members and connecting rod.

2. In a screening machine, a screen; a fixed frame; means for reciprocating said screen including a rotatable eccentric and a connecting rod; anti-friction bearings interposed between said eccentric and said connecting rod, a supporting member at each end of said screen, said members being mounted for oscillation on said frame; bearings on said screen and said frame for said members; a bearing on said screen for the connecting rod; and elastic rubber bushings in said bearings, said bushings being relatively fixed with respect to said members, said connecting rod and said bearings.

3. In a screening machine, a screen; a fixed frame; means on said frame for reciprocating said screen including a rotatable eccentric and a connecting rod for transmitting movement from said eccentric to said screen; oscillatable supporting members for said screen; bearings for said members and connecting rod secured to said screen; elastic rubber members in said bearings; and means for holding said elastic members in fixed relation to said bearings and said supporting members and connecting rod.

4. In a screening machine, a screen; a fixed frame; means for reciprocating said screen including a rotatable eccentric and a connecting rod; a supporting member at each end of said screen, said members being mounted for oscillation on said frame; bearings on said screen and said frame for said members; a bearing on said screen for the connecting rod; and elastic rubber bushings in said bearings, said bushings being relatively fixed with respect to said members, said connecting rod and said bearings.

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